



A new Mexican species of *Megarthritis* Curtis (Coleoptera, Staphylinidae, Proteininae)

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The genus *Megarthritis* Curtis with about 140 species described, is the largest of the subfamily Proteininae (Coleoptera: Staphylinidae) (Cuccodoro 2011; López-García *et al.* 2011). It is distributed worldwide (Cuccodoro 1999) and has an amphipolar distribution, being more diverse in Holarctic region (Newton 1985). In the tropics, the ecological requirements of *Megarthritis* species restrict their presence to mountain areas, showing high levels of endemism, making a taxon potentially informative for biogeographic analysis (Cuccodoro 1998). In Mexico there was only one described species: *Megarthritis altivagans* Bernhauer, 1929, but it is known that there are several undescribed species (Navarrete-Heredia *et al.* 2002). Cuccodoro (2011), recognised “eleven species from Mexico, eleven species from Costa Rica, Guatemala, Honduras, Nicaragua and Panama, and fifteen species from Bolivia, southern Brazil, Colombia, Ecuador, Peru and Venezuela”. In this paper we describe a new species of Mexican *Megarthritis* from the State of Jalisco.

Measurements are in millimeters (mm) and were abbreviated as follows: PL—length of pronotum at midline; EL—length of elytra at midline. Terms for morphological characters and definitions mainly follow Cuccodoro (2011).

Specimens examined are deposited in the following collections: Colección Entomológica, Centro de Estudios en Zoología, Universidad de Guadalajara, Jalisco, México (CZUG), Colección Nacional de Insectos, Instituto de Biología Universidad Nacional Autónoma de México, México (CNIN), Colección Entomológica, Universidad Distrital Francisco José de Caldas, Bogotá, Colombia (MUD) and Muséum d'histoire naturelle, Geneva, Switzerland (MHNG).

Megarthritis alatorreorum sp. nov.

Holotype ♂. MÉXICO, JAL: Teocuitatlán de Corona, Cerro de García, NTP-12. Calamar. 7. VI- 2.VII.2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez, (CZUG). **Paratypes** (28) MÉXICO, JAL: Teocuitatlán de Corona, Cerro de García, NTP-12. Calamar. 7. VI–2.VII.2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez (1♂ 3♀: CZUG); MÉXICO, JAL: Teocuitatlán de Corona, Cerro de García, NTP-12. Calamar. 7. VI–2.VII.2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez (1♂ CZUG); MÉXICO, JAL: Teocuitatlán de Corona, Cerro de García, NTP-11. Calamar. 2. VII- 3. VIII. 2014, 20°10'8.94" N 103°20'53.76"W, 2776 msnm. Col. William D. Rodríguez (1♀: CZUG); MÉXICO, JAL: Teocuitatlán de Corona, Cerro de García, NTP-80-10. Calamar. 2-VII al 3-VIII de 2014, 20°10'9.54" N 103°20'51.72"W, 2774 msnm. Col. William D. Rodríguez. (1♀: CZUG); MÉXICO, JAL: Teocuitatlán de Corona, Cerro de García, NTP-80-12. Calamar. 7-VI al 2-VII de 2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez. (1♀: CZUG); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09-Calamar. 28-IX/31-X de 2013, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (1♂ CNIN); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-07. Calamar. 7-VI al 2-VII de 2014, 20°10'3.78" N 103°20'27.12"W, 2623 msnm. Col. William D. Rodríguez. (1♀ CNIN); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-12. Calamar. 4 - V al 7 - VI de 2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez. (1♀ CNIN); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 2-VII al 3-VIII de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (2♀ CNIN); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 3-VIII al 3 IX de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (1♀ CNIN); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 2-VII al 3-VIII de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (1♂ MUD); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-12. Calamar. 4 - V al 7 - VI de 2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez. (1♂

MUD); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 7-VI al 2-VII de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (2♀ MUD); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-12. Calamar. 2-VII al 3-VIII de 2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez. (2♀ MUD); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 2-VII al 3-VIII de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (2♀ MUD); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 3-VIII al 3 IX de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (1♀ MUD); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-12. Calamar. 4 - V al 7 - VI de 2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez. (1♂ MHNG); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 2-VII al 3-VIII de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (2♀ MHNG); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-07. Calamar. 7-VI al 2-VII de 2014, 20°10'3.78" N 103°20'27.12"W, 2623 msnm. Col. William D. Rodríguez. (1♀ MHNG); MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-12. Calamar. 2-VII al 3-VIII de 2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez. (1♀ MHNG). **Additional specimens examined, not types:** MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 3-VIII al 3 IX de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (2♂ CZUG), MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-12. Calamar. 2-VII al 3-VIII de 2014, 20°10'8.16" N 103°20'51.78"W, 2775 msnm. Col. William D. Rodríguez. (1♂ CZUG), MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09-Calamar. 09-XII/30-XII de 2013, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (1♀ CZUG), MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-09. Calamar. 3-VIII al 3 IX de 2014, 20°10'7.5" N 103°20'22.2"W, 2623 msnm. Col. William D. Rodríguez. (4♀ CZUG), MÉXICO: JAL, Teocuitatlán de Corona, Cerro de García, NTP-80-10. Calamar. 7-VI al 2-VII de 2014, 20°10'9.54" N 103°20'51.72"W, 2774 msnm. Col. William D. Rodríguez. (1♀ CZUG).

Description. Habitus as in Fig. 1. Combined length of pronotum and elytra = 1.5–1.7 mm; length of pronotum = 0.5–0.7 mm. Body dark brown with appendages paler. Dorsal pubescence uniform; medial frontal setae directed backward; elytral and pronotal pubescence slightly arcuate, recumbent; metasternal pubescence becoming sparser in the middle part, recumbent, shorter than prosternal pubescence; pubescence on abdominal tergites parallel, uniform. Front and anterior portion of prohypomera granulate; frontal granulation fine; pronotum, elytral and lateral portions of metasternum granulo-fossulate; posteriomedial portion of metasternum impunctate.

Frons above clypeus with a concave ridge, the latter not carinate; mesal portion of disc weakly evenly convex in lateral view; U-shaped frontal impression very open and inconspicuous. Temples nearly flat in dorsal view. Antennae (Fig. 2), 1.9–2.1 times longer than pronotum.

Pronotum (Fig. 3) with center moderately convex in frontal view; disc shallowly depressed along lateral edges; medial groove nearly straight in lateral view, shallow, parallel-sided; hypomera without discal ridge, nor pit. Prosternal medial ridge absent. Scutellum with anterior margin slightly arcuate in middle and posterior margin slightly arcuate toward acutely angular apex.

Elytra gradually widened (Fig. 1); humeral callus obsolete; disc with very low swellings, nearly flat posteriorly along lateral edge; the lateral edge finely carinate, not denticulate, nearly straight in dorsal view.

Abdominal sternites II and III with medial processes as in Fig. 4, posterior portion of process of sternite III straight.

Male: Anterior frontal edge raised in middle, horn-like. Protarsomeres I bearing tenent setae. Metafemora about as long as mesofemora (Fig. 5). Metatibiae (Fig. 6) longer than mesotibiae (Fig. 7). Metatarsomeres I shorter than combined length of metatarsomeres 2–4. Peg-like setae arranged in a row on mesotrochanters (Fig. 5) and metatibiae, in a double row on mesotibiae, and absent from protrochanter profemora, protibiae, mesofemora, metatrochanter and metafemora. Pubescence on sternites IV–VII becoming denser posteriomedially. Apex of abdominal tergite VIII as in Figs 8–9. Sternite VIII as in Fig. 10. Hemitergites IX as in Fig. 11. Sternite IX lacking subbasal protuberance. Aedeagus as in Figs 12–13.

Female: Anterior frontal edge evenly arcuate in dorsal view. Abdominal tergite VIII (Figs 14–15) with medioapical projection longer than sternite VIII; pubescence on sternites IV–VII uniform; sternite VIII as in Fig. 16. Genital segments as in Figs 17–19; gonocoxal plate lacking mediodorsal ridge.

Etymology. The name is in honor of Patricia Guillermina Alatorre Delgado and in general to the Alatorre family for their hospitality, respect and affection.

Phenology. Specimens were collected in May, June, July, August, October and December. Highest abundance was in June (13) and July (13).

Distribution. This new species of *Megarthus* is apparently restricted to a montane forest of *Pinus-Quercus* in the Transmexican Volcanic Belt (Jalisco: Teocuitatlán de Corona, Cerro de García), where dominant plant elements are:



FIGURE 1. *Megarthrus alatorreorum* **sp nov.** Habitus (scale bar = 1 mm).

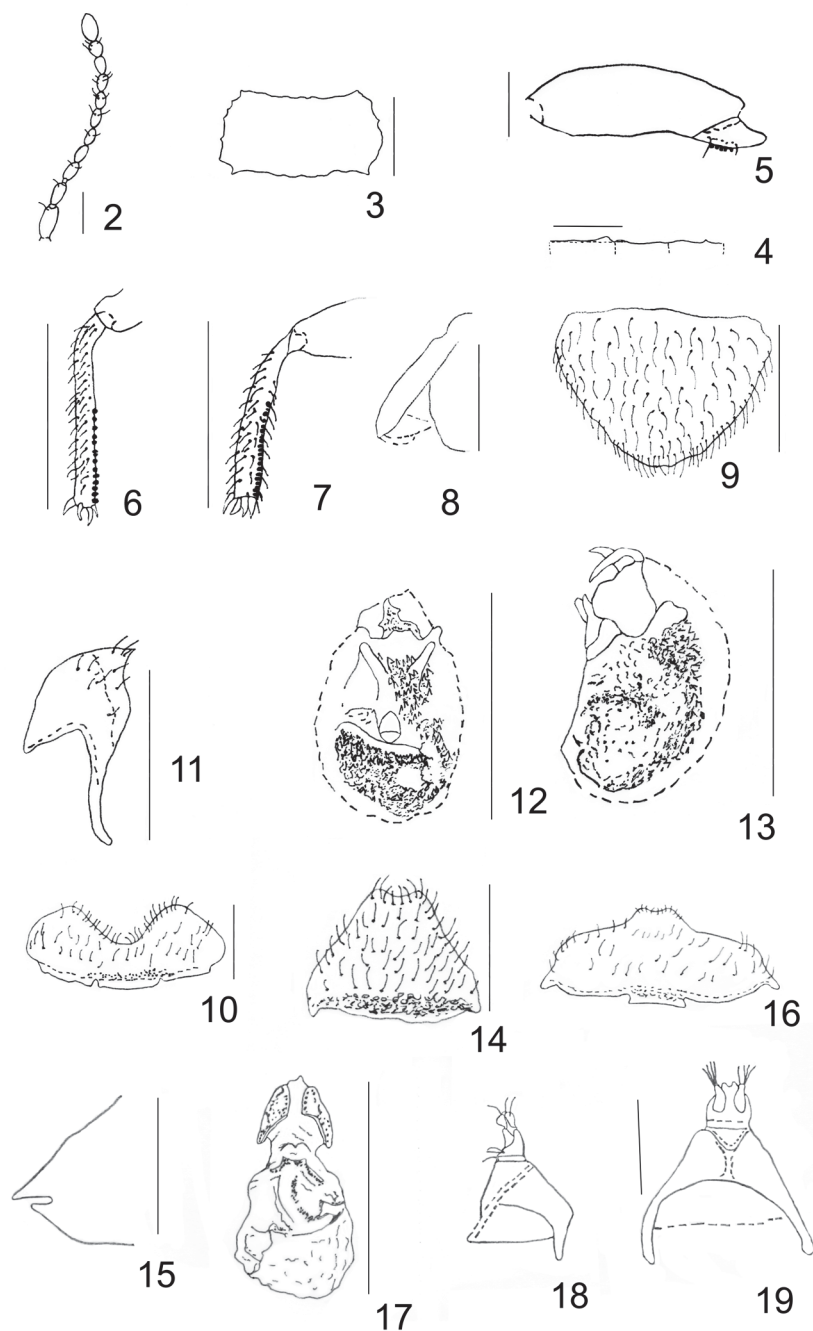


FIGURE 2. Antenna (scale bar = 0.2 mm). **FIGURE 3.** Pronotum (scale bar = 0.6 mm). **FIGURE 4.** Medial area of abdominal sternites II–III (left to right, upside down) in lateral view. **FIGURE 5.** Mesotrochanter and mesofemur of male (scale bar = 0.15 mm). **FIGURE 6.** Metatibia of male (scale bar = 0.5 mm). **FIGURE 7.** Mesotibia of male (scale bar = 0.5 mm). **FIGURE 8.** Apex of male abdominal tergite VIII in lateral view. (scale bar = 0.3 mm). **FIGURE 9.** Apex of abdominal tergite VIII of male in dorsal view. (scale bar = 0.41 mm). **FIGURE 10.** Abdominal sternite VIII of male in ventral view (scale bar = 0.22 mm). **FIGURE 11.** Abdominal hemitergite IX of male (scale bar = 0.5 mm). **FIGURE 12.** Aedeagus in ventral view (scale bar = 0.65 mm). **FIGURE 13.** Aedeagus in lateral view (scale bar = 0.65 mm). **FIGURE 14.** Tergite VIII of female in ventral view (scale bar = 0.4 mm). **FIGURE 15.** Tergite VIII of female in lateral view (scale bar = 0.3 mm). **FIGURE 16.** Sternite VIII of female in dorsal view (scale bar = 0.3 mm). **FIGURE 17.** Genital segments of female, tergites in ventral view (scale bar = 0.9 mm). **FIGURE 18.** Genital segments of female, sternites in lateral view (scale bar = 0.25 mm). **FIGURE 19.** Genital segments of female, sternites in dorsal view (scale bar = 0.25 mm).

Lamiaceae (*Salvia gesneriflora*, *Salvia iodantha* and *Salvia elegans*), Primulaceae (*Anagallis arvensis*), Fagaceae (*Quercus crassipes*), Verbenaceae (*Lippia* spp.), Amaranthaceae (*Iresine* spp.), Onagraceae (*Lopezia* spp. and *Fuchsia* spp.) and Asteraceae (*Verbesina* spp.).

Specimens were collected between 2400–2800 masl with carrion traps baited with squid. Although the species has been collected only with carrion traps we assume that it is not a carrion feeder but a saprophagous species, as other species in this genus. Mushrooms, fruits and other organic matter at decomposing stages might attract more specimens. The minimum temperature of the habitat was 12°C, mean 19.93 °C and a maximum of 29.5 °C, the minimum relative humidity was 24%, mean 68.5% and a maximum of 89%. The mean rainfall was 6.7 mm/month.

Remarks. *Megarthus alatorreorum*, *M. altivagans* and *M. ashei* Cuccodoro & Löbl, 1996 (from Arizona and New Mexico) are the only New World members of the genus to possess an asymmetrical aedeagal valve in combination with prohypomera lacking discal ridge. Among these species *M. alatorreorum* and *M. altivagans* uniquely share a modified frons in the male, but *M. altivagans* lacks a medio-apical projection on abdominal tergite VIII in the female. The aedeagal shape is also diagnostic.

Acknowledgments

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